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PUBLICATIONS AND PATENTS WITH ABSTRACTS

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Ag 82
Enzyme
Enzyme RESEARCH DIVISION
Bureau of Agricultural and Industrial Chemistry
Agricultural Research Administration
United States Department of Agriculture

Western Regional Research Laboratory
Albany, California

January 1, 1948 - June 30, 1948

A limited number of reprints of publications are available.
Those not available are marked with an asterick (*).

Journal Article:

- *B. Axelrod. A new mode of enzymatic phosphate transfer. Jour. Biol. Chem. 172:1-13. January, 1948.
The intra-molecular transfer of phosphate can be performed enzymatically without the participation of nucleotidic compounds. Aryl phosphates can serve as donors, and certain aliphatic hydroxy compounds can function as acceptors. The effects of pH donor and acceptor concentrations on the "phosphotransferase" reaction were studied. A Navel orange juice phosphatase preparation was used for most of these studies. Preparations obtained from apple, taka-diastase and human urine also has "phosphotransferase" activity. All preparations exhibiting this phenomenon also possessed acid phospho-monoesterase activity, although the preparations from onion, sweet potato or pear which had this latter activity were devoid of the transfer faculty.
- O. H. Emerson. The bitter principles of citrus fruit. I. Isolation of nomilin, a new bitter principle from the seeds of oranges and lemons. J. Amer. Chem. Soc. 70:545-549. February, 1948.
Limonin was sole isolable bitter principle in Navel oranges. Seeds of Valencia oranges and lemons yielded limonin and a new bitter principle, nomilin, $C_{28}H_{34}O_9$. Nomilin is apparently a dilactone, but the reaction with alkali is more complex than limonin. Both limonin and nomilin can be oximated with hydroxylamine in pyridine. The non-bitter precursor of limonin in Navel juice behaves like the diacid obtained by opening both lactone rings of limonin, but other possibilities are discussed.
- A. K. Balls. What a foreman should know about enzyme action. Food Industries 20:169. February, 1948.
Enzyme action goes on throughout the life processes of fruits and vegetables. They are active in the growing, maturing, ripening

and decay. The plant foreman must have information regarding the conditions of all vegetables and fruits that are processed in his plant. Many of his processes either take advantage of enzyme action or he is interested in how to inactivate them so that unpleasant reactions will not take place after processing. Enzyme research has answered many of these problems, but there are still many others that need further research.

- A. K. Balls, M. K. Walden and R. R. Thompson. A crystalline beta-amylase from sweet potatoes. Jour. Biol. Chem. 173:9-19. March, 1948.

An amylase of the beta type in sweet potatoes has been purified and isolated as a crystalline protein. The methods are described in detail. Some studies on the crystalline protein are also reported, including its isoelectric point, pH of greatest activity, and the principal amino acids of which it is composed. The yield after three crystallizations represents about ten percent of the original amylolytic activity.

PATENTS

- *I. W. Tucker and A. K. Balls. Separation of starch and protein in wheat grain products and extraction of diastase therefrom. U. S. Patent 2,434,374. January 20, 1948.

Invention relates to isolation of starch, gluten, and diastase from cereal products such as wheat flour. Thus wheat flour is contacted with an aqueous solution of a sulphite salt. Air is then beaten into the mixture causing the gluten to rise to the top of the mixture as a scum. The starch particles settle to the bottom while the diastase remains dissolved in the liquid phase.

- *W. G. Rose. Nitrogenous diacyl-glycerophosphates. U. S. Patent 2,436,699. February 24, 1948.

Patent describes methods for preparing aminoethyl esters of diacyl-glycerophosphoric acids by a process involving reaction of a diacyl-glycerophosphoryl chloride with carbobenzoxyaminoethanol. The products are useful as emulsifying, water-binding, and dispersing agents.